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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,481	12/12/2003	Claus Garbe	WWELL73.008C1	2551

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EXAMINER	
TONGUE, LAKIA J	

ART UNIT	PAPER NUMBER
1645	

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/735,481	GARBE ET AL.	
	Examiner	Art Unit	
	Lakia J. Tongue	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,6,31,33,35,37,41,43 and 47-51* is/are pending in the application.

4a) Of the above claim(s) *6,31,33,35,41 and 47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,37,43 and 48-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 25, 2006 has been entered.

Claims 2, 6, 31, 33, 35, 37, 41, 43, 47, 48 and newly added claims 49-51 are pending. Claims 6, 31, 33, 35, 41 and 47 have been withdrawn from consideration as being drawn to non-elected inventions. Claims 1, 3-5, 7-30, 32, 34, 36, 38-40, 42 and 44-46 have been canceled. Claims 2, 37, 43 and 48-51 are currently under examination.

Objections/Rejections Withdrawn

2. In view of applicants' amendment the objection to the drawings for not accurately indicating the representation of each bar on page 4, paragraph 4 is withdrawn.

3. In view of applicants' amendment the objection to claims 2 and 48 for misspelled words on page 5, paragraph 5 is withdrawn.

Rejections Maintained

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The rejection of claims 2, 37, 43 and 48 under 35 U.S.C. 102(b) as being anticipated by Akerblom et al (U.S. Patent 5,834,192) Is maintained for the reasons set forth in the previous office action, on page 2, paragraph 3.

Applicant argues:

1) Akerblom et al does not disclose an isolated antimicrobially active peptide comprising amino acid residues 63-110 (SEQ ID NO: 2) of dermcidin (DCD) protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein.

2) Akerblom does not teach the claimed peptides.

Applicant's arguments have been fully considered and deemed non-persuasive.

The instant invention is drawn an isolated antimicrobially active peptide comprising amino acid residues 63-110 (SEQ ID NO: 2) of a dermcidin protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein.

With regard to Points 1 and 2, the term comprising constitutes open claim language. Therefor the recited claim language reads on full-length proteins or anything else that includes the recited fragments. The examiner is not viewing the claim language to only incorporate the 48 amino acids claimed, but to incorporate the 48

amino acids and others. This is true for claim 48 as well. The examiner is not viewing the claim language to only incorporate a maximum of 50 amino acids of said C-terminal, but to incorporates the 50 amino acids and others.

Akerblom et al discloses an isolated antimicrobially active peptide comprising amino acid residues 63-110 (SEQ ID NO: 2) (see Figure 2). Moreover, Akerblom et al discloses a fragment (the coding region of the hcap molecule, which encodes a mature protein of 90 amino acids) of the C- terminal (column 2, lines 4-6). The peptide of Akerblom et al appears to be the exact same peptide as the claimed peptide but by a different name. There is nothing on the record via a side-by-side comparison to show that the peptide of the prior art would not have the same activity of the instantly claimed peptide. Since amino acid residues 63-110 (SEQ ID NO: 2) are present, the peptide would inherently have antimicrobial activity.

Lastly, the specification is silent with regard to which amino acid would "naturally" be adjacent to the recited fragment.

As previously presented the rejection was on the ground that Akerblom et al disclose the protein DCD, which was identified in SEQ ID NO: 1. The expression of DCD in sweat glands was demonstrated using the dot blot method. Akerblom et al disclose a polynucleotide and amino acid sequence (SEQ ID NO: 2). SEQ ID NO: 2 is identical to the SEQ ID NO: 1 disclosed in the present application (column 29-30). Moreover Akerblom et al disclose that modifications of the polypeptides include, but are not limited to acetylation, carboxylation, glycosylation, phosphorylation, lipidation and acylation. Post-translational processing which cleaves a "prepro" form of the

protein may also be important for correct insertion, folding and/or function (column 11, lines 14-20). Additionally, Akerblom et al disclose that a fusion protein may be engineered to contain a cleavage site located between a HCAP sequence and the heterologous protein sequence (column 8, lines 42-48). Akerblom et al disclose that it can be designed with signal sequences in addition to other recombinant constructions (column 13, lines 14-20). Lastly, Akerblom et al disclose the use of the isolated protein in pharmaceutical compositions. Administration of the composition is accomplished orally or parenterally and can include topical delivery. Pharmaceutical compositions suitable for use in the present invention include compositions where the active ingredients are contained in an effective amount to achieve the intended purpose (column 22, lines 1-6). Inherently, the antimicrobially active peptide secreted from sweat glands is the same as the claimed composition because Akerblom et al disclose an identical peptide and amino acid sequence, which comprises SEQ ID NO: 1 and fragments thereof (SEQ ID NO: 2).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The new matter rejection of claim 2 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description/new matter requirement on page 6, paragraph 6 is maintained for the reasons of record.

Applicant argues:

1) Support for this limitation can be found in the specification as filed, on page 12 in Example 4, where the inventors synthesized the peptide of SEQ ID NO: 2 and tested it for antimicrobial effects.

2) The synthesized fragment of a larger protein is, by definition, substantially in isolation from sequences naturally occurring adjacent thereto in the larger protein.

Applicant's arguments have been fully considered and deemed non-persuasive.

With regard to Points 1 and 2, the specification does not contemplate amino acid residues 63-110 (SEQ ID NO: 2) of a dermcidin (DCD) protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein. Furthermore, the specification is silent with regard to which amino acid would "naturally" be adjacent to the recited fragment.

As outlined previously, the rejection is on the grounds that the claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection. Claim 2 recites "amino acid residues 63-110 (SEQ ID NO: 2) of a dermcidin (DCD) protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein". The instant specification does not contemplate amino acid residues 63-110 (SEQ ID NO: 2) of a dermcidin (DCD) protein substantially in isolation from sequences naturally occurring adjacent thereto in the dermcidin protein.

New Grounds of Rejection

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 48 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The rejected claim is drawn to an antimicrobially active peptide consisting essentially of a fragment of the C-terminal of dermcidin protein, said fragment comprising a maximum of 50 amino acids of said C-terminal.

To fulfill the written description requirements set forth under 35 USC § 112, first paragraph, the specification must describe at least a substantial number of the members of the claimed genus, or alternatively describe a representative member of the claimed genus, which shares a particularly defining feature common to at least a substantial number of the members of the claimed genus, which would enable the skilled artisan to immediately recognize and distinguish its members from others, so as to reasonably convey to the skilled artisan that Applicant has possession the claimed invention.

Moreover, the skilled artisan cannot envision the detailed chemical structure of the encompassed proteins, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it. The polypeptide itself is required. See Fiers v. Revel, 25 USPQ2d 1601, 1606 (CAFC 1993) and Amgen Inc. V. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016. In Fiddes v. Baird, 30 USPQ2d 1481, 1483, claims directed to mammalian FGF's were found unpatentable due to lack of written description for the broad class. The specification provided only the bovine sequence.

Finally, University of California v. Eli Lilly and Co., 43 USPQ2d 1398, 1404. 1405 held that: ...To fulfill the written description requirement, a patent specification must describe an invention and does so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." Lockwood v. American Airlines Inc. , 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); In re Gosteli , 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." Lockwood, 107 F.3d at 1572, 41 USPQ2datl966.

An adequate written description of the claimed dermcidin derivative, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. Fiers v. Revel, 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993).

However, the specification is silent as to what amino acids must be present in order for a given fragment to possess the recited functional characteristics (antimicrobial activity). Is the maximum of 50 amino acids contiguous, possess substitutions or deletions? The specification does not provide a written description of the invention of claim 48. The purpose of the "written description" requirement is broader than to merely explain how to "make and use"; the applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the "written description" inquiry, whatever is now claimed.

The Guidelines further state, "[f]or inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus" (Id. at 1106); accordingly, it follows that an adequate written description of a genus cannot be achieved in the absence of a disclosure of at least one species within the genus. As evidenced by Bowie et al (Science, 1990, 257:1306-1310), the effects of sequence dissimilarities upon protein structure and function cannot be predicted. Bowie et al. teach that an amino acid sequence encodes a message that determines the shape and function of a protein and that it is the ability of these proteins to fold into unique three-dimensional

structures that allows them to function, carry out the instructions of the genome. Bowie et al. further teach that the problem of predicting protein structure from sequence data and in turn utilizing predicted structural determinations to ascertain functional aspects of the protein is extremely complex. (column 1, page 1306). Bowie et al further teach that while it is known that many amino acid substitutions are possible in any given protein, the position within the protein's sequence where such amino acid substitutions can be made with a reasonable expectation of maintaining function are limited. Certain positions in the sequence are critical to the three dimensional structure/function relationship and these regions can tolerate only conservative substitutions or no substitutions (column 2, page 1306). Therefore, absent a detailed and particular description of a representative number, or at least a substantial number of the fragments of the genus of dermcidin proteins, the skilled artisan could not immediately recognize or distinguish members of the claimed genus having antimicrobial activity. Therefore, because the art is unpredictable, in accordance with the Guidelines, the description of a fragment of the C-terminal of dermcidin protein is not deemed representative of the genus of immunogenic compositions to which the claims refer and hence do not meet the written description requirements.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2, 37, 43 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is rendered vague and indefinite by the use of the phrase "substantially in isolation". It is unclear what is meant by said phrase, as it is not explicitly defined in the specification. What constitutes a "substantially in isolation"? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claim 48 is rendered vague and indefinite by the use of the phrase "consisting essentially of a fragment of the C-terminal....said fragment comprising a maximum of 50 amino acids of said C-terminal". It is unclear what is meant by said phrase, as it is not explicitly defined in the specification. What constitutes "consisting essentially of a fragment of the C-terminal....said fragment comprising a maximum of 50 amino acids of said C-terminal"? What core features/structures must be maintained? What's the minimum number of amino acids which must be present to maintain antimicrobial activity? As written, it is impossible to determine the metes and bounds of the claimed invention.

Allowable Subject Matter

8. Claims 49-51 are allowed.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lakia J. Tongue whose telephone number is 571-272-2921. The examiner can normally be reached on Monday-Friday 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Brenda Brumback can be reached on 571-272-0961. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJT
10/24/06

ROBERT A. ZEMAN
PRIMARY EXAMINER